

International General Certificate of Secondary Education
UNIVERSITY OF CAMBRIDGE LOCAL EXAMINATIONS SYNDICATE
PHYSICS **0625/5**

PAPER 5 Practical Test

INSTRUCTIONS

Monday **20 NOVEMBER 2000** Morning 1 hour 15 minutes

Great care should be taken that any confidential information given does not reach the candidates either directly or indirectly.

Instructions for preparing apparatus

The teacher responsible for preparing the examination is **not** allowed to consult the question paper before the examination. Teachers should, as a part of the preparation of the examination requirements, perform the tests indicated on pages 3–5 in order to satisfy themselves that the supplied materials are satisfactory.

N.B. The candidates will be instructed not to write out a detailed description of the apparatus; instead, the Supervisor or teacher responsible is asked to give (and attach to the Report form printed on pp. 7 and 8) a *brief* description of the apparatus supplied, mentioning any points which are likely to be of importance to the Examiner in marking the answers. The Supervisor should also report any assistance given to candidates under the regulations explained on page 2. All reports should be signed by the Supervisor and by the person responsible for preparing the apparatus.

In addition to the usual equipment of a physics laboratory, each candidate will require the apparatus specified on pages 3–5. If a candidate breaks any of the apparatus, or loses any of the material supplied, the matter should be rectified and a note made in the Report.

These instructions consist of 7 printed pages and 1 blank page.

Instructions for the Practical Physics Supervisor

A *Assistance to Candidates*

The purpose of the Practical Physics test is to find out whether the candidates can carry out simple practical work themselves. The Examiners are aware that candidates may sometimes be unable to show their practical ability through failure to understand some point in the theory of the experiment. If an Examiner were present in the laboratory, he would be willing to give a hint to enable such a candidate to get on with an experiment. In order to overcome this difficulty, the Supervisor is asked to co-operate with the Examiners to the extent of being ready to give (or allow the Physics teacher to give) a hint to a candidate who is unable to proceed.

The following regulations must be strictly adhered to.

- (i) No hint may be announced to the candidates as a whole.
- (ii) A candidate who is unable to proceed and requires assistance must come up to the Supervisor and state the difficulty. Candidates should be told that the Examiners will be informed of any assistance given in this way.
- (iii) A report must be made of any assistance given to the candidate, with the name and index number of the candidate.

It is suggested that the following announcement be made to the candidates.

'The Examiners do not want you to waste time through inability to get on with an experiment. Any candidate, therefore, who is unable to get on with the experiment after spending 5 minutes at it, may come to me and ask for help. I shall report to the Examiners any help given in this way, and some marks may be lost for the help given. You may ask me for additional apparatus which you think would improve the accuracy of your experiments, and you should say, on your script, how you use any such apparatus supplied.'

B *Number of sets of apparatus*

As a *minimum*, the number of sets of apparatus provided should be $N/4$, where N is the number of candidates (per session): a few spare sets should, preferably, be available to avoid any candidate being delayed when moving to another question.

Centres may find it more convenient and easier to administer if $N/3$ sets (plus one or two 'spares') of apparatus are provided.

The order in which a given candidate attempts the four questions is immaterial.

Question 1

Items to be supplied by the Centre (per set of apparatus unless otherwise specified).

- (i) Thermometer, -10°C to 110°C
- (ii) Clamp, boss and stand
- (iii) 250 ml beaker containing hot water
- (iv) stopclock or watch – candidates may prefer to use their own wristwatch.

Notes:

1. The apparatus is to be set up for the candidates as shown in Fig. 1.1. Candidates will be required to easily remove the thermometer from the water in order to study its cooling.

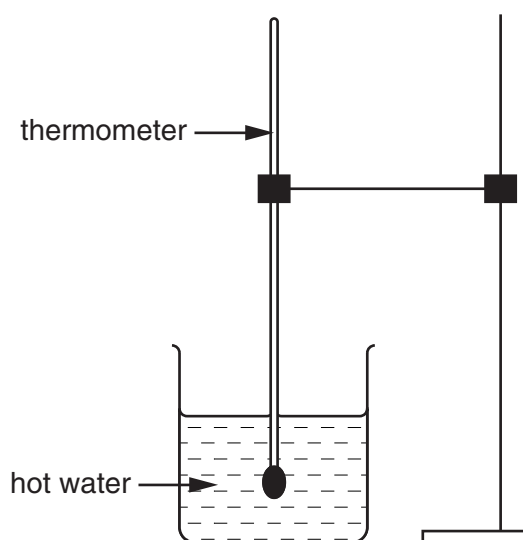


Fig. 1.1

2. The hot water is to be supplied for each candidate by the Supervisor. The water temperature should be between 80°C and 100°C .
3. Candidates should be warned of the dangers of burns or scalds when using very hot water.

Question 2

Items to be supplied by the Centre (per set of apparatus unless otherwise specified).

- (i) Metre rule (see note 1 below)
- (ii) Triangular block to act as a pivot for the metre rule. This block is to stand on the bench.
- (iii) 50 g mass, labelled '**R**'
- (iv) A matchbox or similar very light container of length approximately 50 mm (see note 2)
- (v) Lump of plasticine, mass 30 g (see note 2 below)
- (vi) Loop of thin string or thread to enable the matchbox to be hung from the metre rule (see Fig. 2.1)

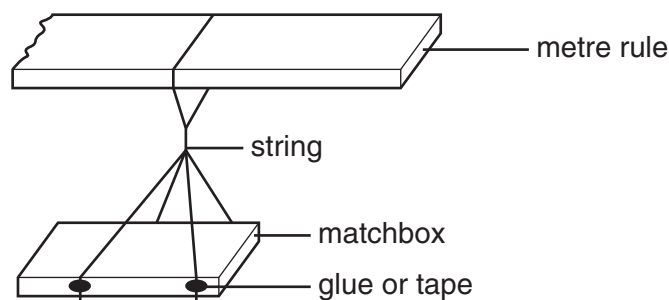


Fig. 2.1

Notes

1. The metre rule should balance on the pivot when the 50 cm mark is directly over the pivot. It may be necessary to tape a small mass (eg plasticine) to one end of the rule to achieve this.
2. The lump of plasticine is to be fixed securely inside the matchbox so that the centre of mass is 20 mm from one end. The box must be taped so that it remains closed. The end of the box nearer to the centre of mass is to be labelled '**A**'. The box is to be labelled '**object**'.
3. It must be possible for the metre rule to overlap the bench by about 40 cm (see Fig. 2.2).

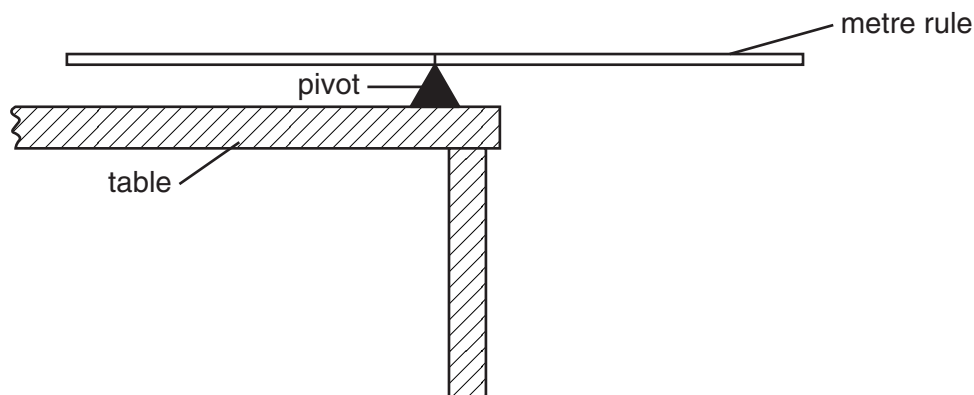
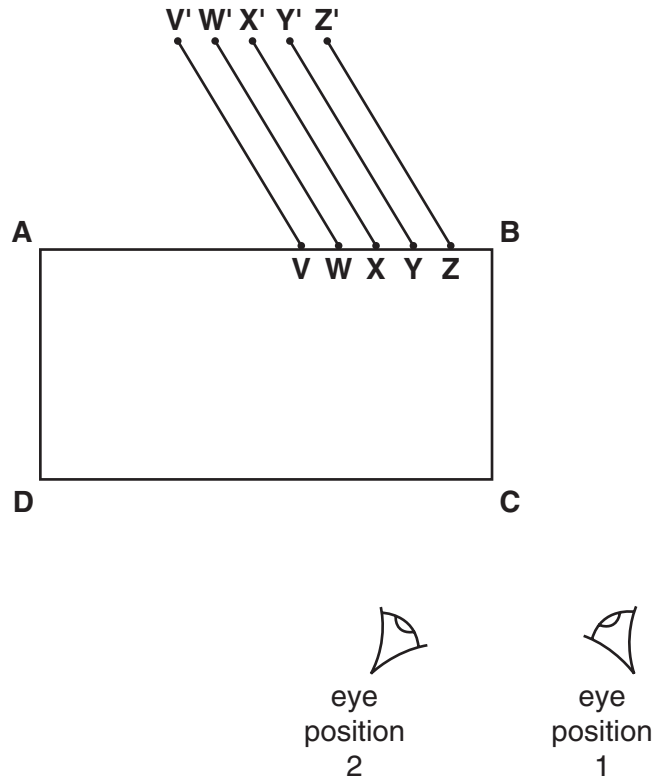


Fig. 2.2

Question 3

Items to be supplied by the Centre (per set of apparatus unless otherwise specified).

- (i) 4 optics pins
- (ii) Pin board, 300 mm x 210 mm or larger. A cork mat would be suitable.
- (iii) 300 mm or 500 mm rule. Candidates may use their own.
- (iv) Transparent glass or perspex block approximately 115 mm x 65 mm x 20 mm
- (v) As the optical pins are moved from **V** and **V'** to **Z** and **Z'**, total internal reflection should occur.



Question 4

Items to be supplied by the Centre (per set of apparatus unless otherwise specified).

- (i) Voltage source of approximately 2 V. Where candidates are supplied with a voltage source with a variable output voltage, the voltage setting should be set by the Supervisor and fixed (eg taped)
- (ii) 2 similar lamps in suitable holders. Any low voltage lamps will suffice.
- (iii) Switch
- (iv) Voltmeter capable of measuring the source voltage to a precision of at least one decimal place
- (v) 6 connecting leads

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This form must be completed and returned with the scripts.

REPORT ON PRACTICAL PHYSICS

(IGCSE NOVEMBER 2000)

General

The Supervisor is invited to give details of any difficulties experienced by particular candidates giving their names and candidate numbers. These should include reference to:

- (a) difficulties due to faulty apparatus;
- (b) accidents to apparatus or materials;
- (c) any other information that is likely to assist the Examiner, especially if this cannot be discovered in the scripts;
- (d) any help given to a candidate.

Information required

A plan of workbenches, giving details by index number of the places occupied by the candidates for each experiment for each session, must be enclosed with the answer booklets.



Information required (cont.)

A list by name and index number of candidates requiring help, with details of the help provided.

CENTRE NO.

NAME OF CENTRE

Declaration (to be signed by the Principal)

The preparation of the practical examination has been carried out so as to maintain fully the security of the examination.

SIGNED